REMARKS

The Office Action dated March 17, 2009, has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

By this Response, claims 37, 48-49, 55, 65, 71, and 73 have been amended to more particularly point out and distinctly claim the subject matter of the present invention. No new matter has been added. Support for the feature "non-reflective" may be found in the specification, for example, at page 3, lines 17-22. Claim 51 has been cancelled without prejudice or disclaimer. Accordingly, claims 37-50, 52-60, 63-65, and 68-75 are currently pending in the application, of which claims 37, 65, and 71 are independent.

Claim Objection

Claims 55 and 73 were objected to because of alleged informalities. Specifically, the Office Action asserted that the language "the or" in the claims makes the claims unclear. Applicant has amended claims 55 and 73 to recite "the" instead of "the or each." Accordingly, Applicant respectfully submits that this objection is moot in view of the claim amendments, and respectfully requests that this objection be withdrawn.

Reconsideration and allowance of claims 55 and 73 are, thus, respectfully submitted.

Claim Rejections - 35 U.S.C. 103

Claims 37-45, 48, 52-60, 63-65, and 68-75 were rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent No. 6,369,800 of Nading et al. ("Nading"). The Office Action acknowledged that Nading fails to disclose or suggest all of the features of claims 37-45, 48, 52-60, 63-65, and 68-75, and asserted that it would have been an obvious matter of design choice to modify Nading to obtain the invention as specified in these rejected claims. Applicant respectfully submits that each of claims 37-45, 48, 52-60, 63-65, and 68-75 recites subject matter that is neither disclosed nor suggested by Nading.

As a threshold matter, Applicant respectfully submits that the Office Action is legally improper because it is incomplete. 37 C.F.R. 1.104(b) explicitly requires, "The examiner's action will be complete as to all matters." "In order to provide a complete application file history and to enhance the clarity of the prosecution history record, an examiner must provide clear explanations of all actions taken by the examiner during prosecution of an application" (*see* MPEP 707.07(f)). However, the Office Action failed to cite the portions of Nading that allegedly teach the features of claim 60 (*see* Office Action at page 10). Thus, Applicant respectfully submits that the Office Action is deficient because it does not provide a clear explanation of the rejection of claim 60, as required by the MPEP. Accordingly, Applicant respectfully requests that, if the rejection of claim 60 is maintained, citations to the portions of Nading that allegedly teach the

features of this claim be in a new non-final Office Action. Applicant respectfully requests that the finality of the present Office Action be withdrawn.

Independent claim 37, upon which claims 38-50, 52-60, 63-64, and 68-70 depend, is directed to an apparatus including a light guide having a surface to internally reflect a generated light signal from a transmitter to a receiver. The apparatus also includes an actuator having a non-reflective actuator surface, non-reflective actuator surface having at least a portion which is movable between a first position spaced apart from a portion of the light guide surface, with a gas or fluid therebetween, and a second position which is in contact with the portion of the light guide surface. The portion of the light guide surface has a higher refractive index than the portion of the non-reflective actuator surface. The portion of the non-reflective actuator surface has a different refractive index than the gas or fluid. In use the relative refractive index is changed at a contacted portion of the light guide surface, thereby altering the light signal received by the receiver. The portion of the non-reflective actuator surface is deformable.

Independent claim 65, upon which claims 72-75 depend, is directed to a method including reflecting a generated light signal off a surface. A relative refractive index between materials on either side of the surface is changed by contacting the surface with a non-reflective deformable actuator, thereby altering the reflected light signal, the reflected light signal being received and used to control a position of an element.

Independent claim 71 is directed to an apparatus including light guiding means for guiding light, the light guiding means having a surface for internally reflecting a

generated light signal from transmitting means to receiving means. The apparatus also includes actuating means for actuating, the actuator means having a non-reflective surface with at least a portion of which is movable between a first position spaced apart from a portion of a light guide surface, with a gas or fluid therebetween, and a second position in contact with the portion of the light guide surface, the portion of the light guide surface having a higher refractive index than the portion of the non-reflective actuator surface, and the portion of the non-reflective actuator surface having a different refractive index than the gas or fluid. In use the relative refractive index is changed at the contacted portion of the light guide surface, thereby altering the light signal received by the receiving means.

Applicant respectfully submits that Nading fails to disclose or suggest all of the features of any of the presently pending claims.

Nading describes a method and apparatus for use with a keypad for an electronic device including at least one plunger associated with a key. The plunger is moveable between a first position and a second position relative to the electronic device. The apparatus is an electrical assembly including a light guide, and at least one electrical component carried by the light guide and positioned to underlie the key. Positioning to underlie the key is for at least one of a) illuminating the key, and b) changing between a first electrical state and a second electrical state in response to the plunger being moved between the first and second positions to indicate that the key has been operated by the user (*see* Nading at Abstract).

However, Nading fails to disclose or suggest, at least, "an actuator having a non-reflective actuator surface," as recited in independent claim 37 and similarly recited in the other independent claims. The Office Action asserted that the actuator of the claimed invention corresponds to a plunger of Nading (*see* Office Action at page 3, lines 1-5). Nading refers to the plunger including a light reflective material or coating positioned on the plunger to direct a light signal from a light source to an optical detector (*see* Nading at column 3, lines 61-66).

Thus, the plunger does not have a non-reflective surface. Accordingly, Nading fails to disclose or suggest, at least, "an actuator having a **non-reflective** actuator surface," (emphasis added) as recited in independent claim 37 and similarly recited in the other independent claims. This distinction is important because while the plunger of Nading reflects the light signal from the light source to the optical detector, as discussed above, the actuator of the claimed invention does not directly do this. In contrast, the actuator alters reflective properties of a light guide, which internally reflects a light signal from a transmitter, to reflect the light signal to a receiver (*see* Specification at page 3, lines 4-22). In other words, the actuator does not reflect the light signal but changes the light guide that does reflect the light signal.

Furthermore, Nading fails to disclose or suggest, at least, "wherein in use the relative refractive index is changed at a contacted portion of the light guide surface, thereby altering the light signal received by the receiver," as recited in independent claim 37 and similarly recited in the other independent claims. The Office Action asserted that

these features are disclosed by Nading at column 3, lines 61-66, and Figure 2. In the cited portion, Nading refers to the plunger 16A including the light reflective material or coating 36 positioned on the plunger 16A to direct the light signal 34A from the light source 30A to the optical detector 32A when the plunger 16 is moved to the second position, as shown in phantom.

However, Nading does not disclose or suggest that a relative refractive index is changed at a contacted portion of a light guide surface, thereby altering the light signal received by the optical detector. Accordingly, Nading fails to disclose or suggest, at least, "wherein in use **the relative refractive index is changed at a contacted portion of the light guide surface**, thereby altering the light signal received by the receiver," (emphasis added) as recited in independent claim 37 and similarly recited in the other independent claims. In contrast, as discussed above, Nading refers to the plunger directly reflecting the light signal from the light source to the optical detector, thereby altering the light signal received by optical detector. In other words, Nading makes no mention of the plunger changing reflective properties of the light guide via contact with the light guide. Nading does not even mention a relative refractive index of any medium nor any features of the portion of the light guide surface contacted by the plunger.

Furthermore, Nading fails to disclose or suggest, at least, "wherein the portion of the non-reflective actuator surface is deformable," in independent claim 37 and similarly recited in the other independent claims. The Office Action acknowledged that Nading does not disclose or suggest these features, and cited U.S. Patent Appln. Pub. No.

2002/0061735 of Wingett et al. ("Wingett") to remedy the deficiencies of Nading with respect to these features. Specifically, the Office Action asserted that these features are disclosed by Wingett at paragraph 32 and Figure 5. In the cited portion, Wingett refers to a bridging membrane 27 between a navigation key 19 and a surrounding keypad 15 that resists tilting of the navigation key 19. As off-centre pressure is applied to the face of the navigation key 19, a base 20 is tilted, and the bridging membrane 27 is stretched. The Office Action asserted that the bridging membrane of Wingett corresponds to the portion of the actuator surface of the claimed invention.

However, the bridging membrane of Wingett cannot correspond to the portion of the actuator surface of the claimed invention. Accordingly, the combination of Nading and Wingett does not disclose or suggest, at least, "wherein the portion of the non-reflective actuator surface is deformable," in independent claim 37 and similarly recited in the other independent claims. Specifically, Wingett fails to disclose or suggest that the bridging membrane of Wingett is movable to a position which is in contact with a portion of a light guide surface or any surface. However, this feature is required of the portion of the actuator surface of the claimed invention (*see, e.g.,* independent claim 37). Therefore, even though the bridging membrane of Wingett can be stretched, as discussed above, the bridging membrane cannot correspond to the portion of the actuator surface of the claimed invention.

For at least the reasons discussed above, Applicant respectfully submits that Wingett fails to disclose or suggest all of the elements of independent claims 37, 65, and

71. Accordingly, Applicant respectfully requests that the rejection of independent claims 37, 65, and 71 be withdrawn.

Claim 38-45, 48, 52-60, 63-64, 68-70, and 72-75 depends from, and further limit, independent claims 37 and 65. Thus, claims 38-45, 48, 52-60, 63-64, 68-70, and 72-75 recites subject matter that is neither disclosed nor suggested in Wingett. Accordingly, Applicant respectfully requests that the rejection of claims 38-45, 48, 52-60, 63-64, 68-70, and 72-75 be withdrawn.

Claim 47 was rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Nading in view of U.S. Patent No. 6,196,691 of Ochiai ("Ochiai"). The Office Action acknowledged that Nading fails to disclose or suggest all of the features of claim 47, and cited Ochiai to remedy the deficiencies of Nading with respect to these rejected claims. Applicant respectfully submits that claim 47 recites subject matter that is neither disclosed nor suggested by the combination of Nading and Ochiai.

In order for this rejection to be sustainable, the combination of Nading and Ochiai must teach all the recitations of independent claim 37. Accordingly, the arguments presented above supporting the patentability of independent claim 37 over Nading are incorporated herein to support the patentability of dependent claim 47. Thus, it is respectfully requested that dependent claim 47 be allowed. Ochiai fails to cure the deficiencies of Nading.

Ochiai describes rays of light from three light-emitting diodes incident at a thicker side end edge of a light guide plate made of a transparent plate. A ratio of grating part

width/non-grating part width in a unit width of a diffraction grating provided on a rear surface of the light guide plate is varied. Grating constant of a diffraction grating of a front surface provided perpendicularly to the diffraction grating, is set to a fixed value smaller than a mean grating constant of the diffraction grating of the rear surface. Thus, uniform, high brightness at the front surface of the light guide plate can be obtained (*see* Ochiai at Abstract).

However, Ochiai fails to cure the deficiencies of Nading. Similarly to Nading, Ochiai fails to disclose or suggest, at least, "an actuator having a non-reflective actuator surface ... wherein in use the relative refractive index is changed at a contacted portion of the light guide surface, thereby altering the light signal received by the receiver, and wherein the portion of the non-reflective actuator surface is deformable" as recited in independent claim 37. Ochiai is silent as to teaching the particular features associated with the actuator and the light guide surfaces of independent claim 37.

Therefore, the combination of Nading and Ochiai would not lead a person of ordinary skill in the art to arrive at the features of the actuator and the light guide surfaces as recited in independent claim 37. Consequently, Applicant submits that independent claim 37 and related dependent claim 47 are not obvious over the combination of Nading and Ochiai.

Claims 49-51 were rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Nading in view of Wingett. The Office Action acknowledged that Nading fails to disclose or suggest all of the features of claims 49-51, and cited Wingett

to remedy the deficiencies of Nading with respect to these rejected claims. Applicant respectfully submits that each of claims 49-50 recites subject matter that is neither disclosed nor suggested by the combination of Nading and Wingett. Claim 51 has been cancelled without prejudice or disclaimer. Accordingly, Applicant respectfully submits that the rejection of claim 51 is moot in view of the claim cancellation, and respectfully requests that this rejection be withdrawn.

In order for this rejection to be sustainable, the combination of Nading and Wingett must teach all the recitations of independent claim 37. Accordingly, the arguments presented above supporting the patentability of independent claim 37 over Nading are incorporated herein to support the patentability of dependent claims 49-50. Thus, it is respectfully requested that dependent claims 49-50 be allowed. Wingett fails to cure the deficiencies of Nading.

Wingett describes a control device for electronic apparatus, such as a mobile telephone handset, including a keymat having a navigation key with a magnet mounted so as to move with the key. A user may change the attitude of the key by tilting or deforming the key, and at least one magnetic field sensor detects the attitude of the key. This may be used to control a pointer displayed on a screen (*see* Wingett at Abstract).

However, Wingett fails to cure the deficiencies of Nading. Similarly to Nading, Wingett fails to disclose or suggest, at least, "an actuator having a non-reflective actuator surface ... wherein in use the relative refractive index is changed at a contacted portion of the light guide surface, thereby altering the light signal received by the receiver, and

wherein the portion of the non-reflective actuator surface is deformable" as recited in independent claim 37. Wingett is silent as to teaching the particular features associated with the actuator and the light guide surfaces of independent claim 37.

Therefore, the combination of Nading and Wingett would not lead a person of ordinary skill in the art to arrive at the features of the actuator and the light guide surfaces as recited in independent claim 37. Consequently, Applicant submits that independent claim 37 and related dependent claims 49-50 are not obvious over the combination of Nading and Wingett.

Claims 37 and 46 were rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent No. 6,844,871 of Hinckley et al. ("Hinckley"). The Office Action acknowledged that Hinckley fails to disclose or suggest all of the features of claims 37 and 46, and asserted that it would have been an obvious matter of design choice to modify Hinckley to obtain the invention as specified in these rejected claims. Applicant respectfully submits that each of claims 37 and 46 recites subject matter that is neither disclosed nor suggested by Hinckley.

Hinckley describes to a mouse that uses a camera as its input sensor. A real-time vision algorithm determines the six degree-of-freedom mouse posture, consisting of 2D motion, tilt in the forward/back and left/right axes, rotation of the mouse about its vertical axis, and some limited height sensing. Thus, a familiar 2D device can be extended for three-dimensional manipulation, while remaining suitable for standard 2D Graphical User Interface tasks (*see* Hinckley at Abstract).

However, Hinckley fails to disclose or suggest, at least, "an actuator having a non-reflective actuator surface," as recited in independent claim 37 and similarly recited in the other independent claims. The Office Action asserted that the actuator and the actuator surface of the claimed invention correspond to a mouse and the bottom of the mouse of Hinckley, respectively (*see* Office Action at page 15, line 16).

However, Hinckley does not disclose or suggest that the bottom of the mouse is non-reflective. Accordingly, Hinckley fails to disclose or suggest, at least, "an actuator having a **non-reflective** actuator surface," (emphasis added) as recited in independent claim 37 and similarly recited in the other independent claims. In fact, Hinckley does not mention any particular features of the bottom of the mouse.

Furthermore, Hinckley fails to disclose or suggest, at least, "wherein in use the relative refractive index is changed at a contacted portion of the light guide surface, thereby altering the light signal received by the receiver," as recited in independent claim 37 and similarly recited in the other independent claims. The Office Action asserted that these features are disclosed by Hinckley at column 7, lines 46-50, and Figure 9. In the cited portion, Hinckley refers to light from LEDs 282, 284, 286, 288, 290, and 292 of the mouse being reflected off a working surface and into a camera 294. The Office Action appears to assert that the working surface of Hinckley corresponds to the light guide surface of the claimed invention (*see* Office Action at page 16, lines 3-8).

However, Hinckley does not disclose or suggest that a relative refractive index is changed at a contacted portion of the working surface, thereby altering the light received

by the camera. Accordingly, Hinckley fails to disclose or suggest, at least, "wherein in use **the relative refractive index is changed at a contacted portion of the light guide surface**, thereby altering the light signal received by the receiver," (emphasis added) as recited in independent claim 37 and similarly recited in the other independent claims. Instead, as discussed above, Hinckley refers to working surface simply reflecting the light into the camera, not changing its relative refractive index at a contacted portion. Hinckley does not even mention a relative refractive index of any medium.

Furthermore, Hinckley fails to disclose or suggest, at least, "wherein the portion of the non-reflective actuator surface is deformable," in independent claim 37 and similarly recited in the other independent claims. As discussed above, Hinckley does not mention any particular features of the bottom of the mouse, including whether the bottom of the mouse is deformable.

For at least the reasons discussed above, Applicant respectfully submits that Hinckley fails to disclose or suggest all of the elements of independent claim 37. Accordingly, Applicant respectfully requests that the rejection of independent claim 37 be withdrawn.

Claim 46 depends from, and further limit, independent claim 37. Thus, claim 46 recites subject matter that is neither disclosed nor suggested in Hinckley. Accordingly, Applicant respectfully requests that the rejection of claim 46 be withdrawn.

Reconsideration and allowance of claims 37-50, 52-60, 63-65, and 68-75 are, thus, respectfully submitted.

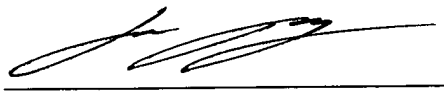
Conclusion

For at least the reasons discussed above, Applicant respectfully submits that the cited references fail to disclose or suggest all of the features of the claimed invention. These distinctions are more than sufficient to render the claimed invention unanticipated and unobvious. It is thus respectfully requested that all of claims 37-50, 52-60, 63-65, and 68-75 be allowed, and that this application be passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, Applicant's undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, Applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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